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|-------------------------------|------------------------|---------------------|--|
| <b>Notice of Allowability</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                               | 10/584,335             | LEE ET AL.          |  |
|                               | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                               | ASHLEY SHIVERS         | 2477                |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the After Final Amendment filed on Feb. 13, 2012.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on \_\_\_\_; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are 42 and 44-58 (renumbered 1-16, respectively).
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☒ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_.

Applicant has **THREE MONTHS FROM THE "MAILING DATE"** of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

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|--|---|
| <ol style="list-style-type: none"> <li>1. <input type="checkbox"/> Notice of References Cited (PTO-892)</li> <li>2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</li> <li>3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br/>Paper No./Mail Date ____</li> <li>4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br/>of Biological Material</li> </ol> | <ol style="list-style-type: none"> <li>5. <input type="checkbox"/> Notice of Informal Patent Application</li> <li>6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),<br/>Paper No./Mail Date <u>3/2/12</u>.</li> <li>7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment</li> <li>8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance</li> <li>9. <input type="checkbox"/> Other ____.</li> </ol> |
|--|---|

/Gregory B Sefcheck/  
Primary Examiner, Art Unit 2477  
3/5/2012

/A. S./  
Examiner, Art Unit 2477  
3/2/2012

## DETAILED ACTION

### EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Tony Chang on March 2, 2012.

2. The application has been amended as follows:

#### Title

Preamble Configuring Method in the Wireless LAN ~~LAM~~ System, and a Method for a Frame Synchronization

#### Claims

42. (**Currently Amended**) A method of configuring a preamble for synchronization and channel estimation in a wireless local area network system, the preamble comprising a first preamble and a second preamble, the method comprising:

a) arranging the first preamble, used for time and frequency synchronization in a receiver, at starting points of an uplink burst and a downlink burst, wherein arranging the first preamble comprises:

arranging, within a data symbol period, 16 S symbols in the starting points of the uplink burst and the downlink burst, and

arranging an IS symbol after the 16 S symbols, wherein the IS symbol has a length of a predetermined guard interval and is 180°-phased with respect to the S symbols; and

b) arranging the second preamble, used for fine frequency offset estimation and channel estimation in the receiver, after the first preamble, wherein arranging the second preamble comprises arranging two L symbols after the first preamble,

wherein a frequency domain signal SP<sub>k</sub> of the first preamble is given as the following Equation:

$$SP_k = \begin{cases} \sqrt{200/24} \times (C_{1,m+1}^s + jC_{s,m+1}^s), & k = 16 \times m, 0 \leq m \leq 6 \\ \sqrt{200/24} \times (C_{1,m+1}^s + jC_{s,m+1}^s), & k = 16 \times (m+1) + 4, 6 \leq m \leq 11 \\ 0, & \text{otherwise} \end{cases}$$

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where  $\sqrt{200/24}$  is a normalized power value resulted from using 12 sub-carriers

among 200 sub-carriers  $C_{s,m+1}^s$  is calculated by inverting 0 into -1 in a matrix generated by an m-sequence generator of a fourth degree polynomial  $x^4+x+1$ , and  $s$  is an initial value.

43. (Canceled)

44. (Currently Amended) The method of claim ~~42~~ 43, wherein a time domain signal of the first preamble is formed by adding the IS symbol to a signal which is an Inverse Fourier Transform (IFFT) processed frequency domain signal  $SP_k$ .

*Reasons for Allowance*

3. The following is an examiner's statement of reasons for allowance:

Claims 42 and 44-49 appear to be novel and inventive because prior art fails to show or teach the claimed method of determining the frequency domain signal of the first preamble in combination with the generation of the first and second preambles.

Claims 50-58 appear to be novel and inventive because prior art fails to show or teach the claimed method of detecting frame synchronization of the short preamble in a form of a periodically repeated signal according to a characteristic of auto-correlation of the short preamble, wherein the detecting comprises calculating an auto-correlation value based on an average value calculated by multiplying a conjugate complex value of a delayed signal, of a short preamble delayed by auto-correlation delay, by a received signal and the average value calculated by squaring the delayed signal.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

*Conclusion*

4. Any response to this action should be **faxed** to (571) 273-8300 or **mailed** to:

Commissioner of Patents,  
P.O. Box 1450  
Alexandria, VA 22313-1450

**Hand delivered responses should be brought to:**  
Customer Service Window  
Randolph Building  
401 Dulany Street  
Alexandria, VA 22314

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ASHLEY SHIVERS whose telephone number is (571)270-3523. The examiner can normally be reached on Monday-Friday 9:00-6:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chirag Shah can be reached on (571) 272-3144. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. S./  
Examiner, Art Unit 2477  
3/2/2012

/Gregory B Sefcheck/  
Primary Examiner, Art Unit 2477  
3/5/2012